

technology, share expertise and experience ... and now, we only have to make a mistake once," Tim Kratz, chairman of the network's steering committee and director of Trout Lake Station, said.

Kratz pointed to Cayelan Carey, a Ph.D. candidate at Cornell university who is studying how lakes respond to algae blooms.

spots for collecting and processing carbon from surrounding terrestrial areas.

Through examining data from the sensors, which have been on lakes all over the world for three or four years, GLEBON is also making breakthroughs on current scientific understanding of these biological relationships.

"We thought we had an understanding

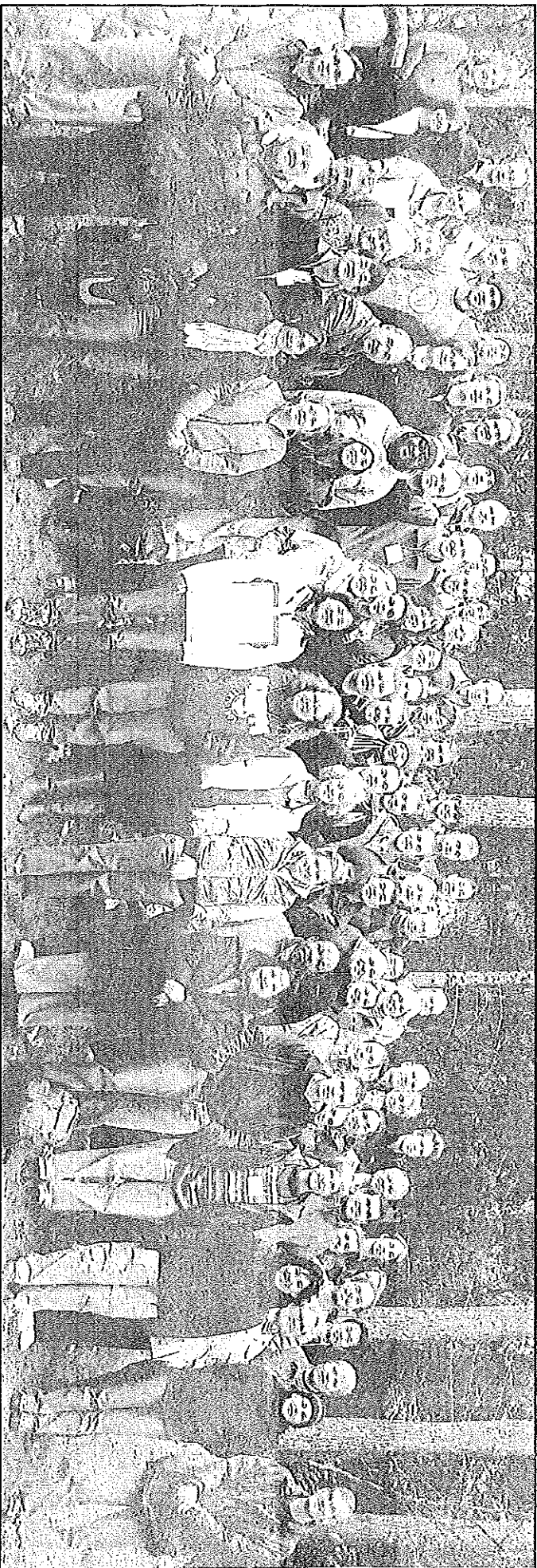
ability is not known, the effect is a carbon balance that fluctuates more widely than scientists previously thought.

Understanding these fluctuations has broad implications; lakes play a direct role on the greenhouse gases present in the atmosphere, which effects global climate change. The carbon balance is then also relevant to people who enjoy lakes recre-

than ever.

"Before, it was like trying to observe the world for only two hours, and the rest of the time you had to keep your eyes shut," he said. "Now, we can observe and keep our eyes open for a full 24 hours."

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Contributed photo

In all, there were 99 international scientists from across the globe who attended the Global Lake Ecological Observatory Network meeting recently held at Camp Manitowish in Boulder Junction.

Vilas board unanimously approves general code amendments

By Eric Johnson
of The Lakeland Times

Updating Chapter 9 of the Vilas County General Code, county board supervisors unanimously approved the recent passage of Ordinance 2009-3A, a joint Legislative and Judicial Committee and Law Enforcement and Emergency Management Committee recommendation to amend several of the code's "public peace and order" provisions. Approved amendments to Chapter 9

include the amendment of Section 9.21, governing false alarms, and the addition of three new sections governing fireworks (Section 9.07), howling/barking dogs (Section 9.28) and vicious dogs (Section 9.29). Section 9.07, regulating fireworks, contains the following provisions:

- Adoption of the provisions of Section 167.10 of the Wisconsin Statutes, and any associated amendments, for statutory offenses. Any act required to be performed

under the statute is required under Section 9.07, while any act prohibited by the statute is prohibited under Section 9.07.

- Prohibition of fireworks use/display during high fire danger periods as declared by the Wisconsin Department of Natural Resources, with the exception of use/display by a commercial entity in conjunction with a municipally-sponsored event.

- Prohibition of fireworks use/display between 11 p.m. and 7 a.m.

- Violators shall be subject to a fine of \$100 to \$500, plus court costs and the cost of prosecution. In default of payment, the penalty will be imprisonment in the Vilas County Jail until the forfeiture and costs are paid, but not to exceed 90 days.

- Section 9.07 does not apply and may not be enforced within any Vilas County town, city or village that has adopted or adopts an ordinance in conformity with

International science network meets in the Northwoods

Scientists delve into lake research and culture

By Leah Gernetzke
of The Lakeland Times

The lake-dense Northwoods of Wisconsin attracts throngs of tourists each year, magnetically pulled by the area's aesthetic value.

But this year, 99 international scientists joined the tourist's migration, convening for a week-long Global Lake Ecological Observatory Network (GLEON) meeting at Camp Manitowish in Boulder Junction.

The scientists, some of whom include graduate students working toward their Ph.D.s, came from government institutions and universities in 16 different countries across six continents.

The relatively small but growing grass-roots network was formed in 2004 to compile and share data on lakes as diverse as the scientists representing them.

The network meets about twice a year, at international locations; this meeting, which was hosted by the University of Wisconsin-Trout Lake Station, was their ninth.

Before the network began, scientists worked in an independent, local setting, creating isolated observations.

Through the network the scientists may pool their observations to create broader scientific questions.

"The theory behind the network is that we can ask the big questions, use new technology, share expertise and experience... and now, we only have to make a mistake once," Tim Kratz, chairman of the network's steering committee and director of Trout Lake Station, said.

"She sampled two lakes by herself, and now she has access to 25 lakes," he said. "That would not be possible alone."

Carey said the network has also allowed her to organize and coordinate scientists from around the world to participate in her project.

"GLEON provides the framework to both collaborate internationally and synthesize data from lakes worldwide," she said.

The network can also compare unique geological, climatic and cultural settings to examine how lakes change over time.

Most of this information is gathered from sensors the network has deployed on different lakes. These monitor aquatic variables, collecting data every one to 10 minutes, which is then wirelessly conveyed to computer databases.

From this data, scientists can glean essential information about the health of an eco-system by examining lake properties, such as the amount of oxygen and carbon in the water.

The ratio between these amounts is determined by the balance between photosynthesis, the process in which plant organisms in the lake take carbon dioxide from the atmosphere, and respiration, during which those lake organisms emit carbon dioxide.

The balance between photosynthesis and respiration forms the metabolism of a lake, which in turn forms the base of a food chain; the higher the metabolism, the more lake plants grow, which nourish organisms such as fish.

By studying lake metabolism, scientists have discovered that lakes are hot spots for collecting and processing carbon from surrounding terrestrial areas.

Through examining data from the sensors, which have been on lakes all over the world for three or four years,

Coordination

• The Global Lake Ecological Observatory Network (GLEON) held its ninth meeting since 2004 at Camp Manitowish in Boulder Junction.

• The network is comprised of scientists and graduate students from 16 different countries across six continents.

• From the data gleaned from sensors the network deployed on lakes around the world, scientists have been better able to understand the function of lake metabolism, its relevance in the eco-system, and the broader role it plays in global climate change.

of a lake metabolism," Kratz said. "But it turns out there's a lot more short term variability than we ever thought... We're not sure yet what drives that variability, but with a rich data set we've acquired, we can get that answer."

Kevin Rose, who chairs GLEON's student association and a Ph.D. student in the department of zoology at Miami University, is currently using the data to understand what's behind the variability.

Rose said he is particularly looking at how UV radiation impacts a lake's metabolism and carbon cycle.

"The less algae, the more transparent the lake," he said. "More transparent lakes have less fish. The light influences how productive a lake is."

Though the exact cause of the variability is not known, the effect is a carbon balance that fluctuates more widely than scientists previously thought.

Understanding these fluctuations has broad implications; lakes play a direct role

rationally for activities such as fishing, and to the area's economy by extension.

"Climate change and other anthropogenic activities have the potential to impair the way humans use their environment," Carey said. "To combat these environmental problems, it is necessary that we bring together scientists from across the globe and use technology to monitor the ecosystems in question."

GLEON allows scientists to view these changes in a global context instead of just one area that is being effected, which deepens their understanding of how lakes function overall.

Between meetings, groups communicate to work with the data they acquire through the sensors, as Rose is currently doing.

Though modern technology increasingly facilitates international communication, Kratz said the meetings provide necessary face-to-face collaboration.

Much as the basis of an area's food chain rests on lake metabolism, the basis of scientific collaboration rests on personal relationships, as different cultures represent different approaches to science. Some of these are informal, while others rely on rigid hierarchy.

"Without face-to-face meetings and eating meals together, without personal interaction, none of the international collaboration would happen," Kratz said. "Breaking down interpersonal barriers and taking time to give people a cultural experience is necessary to be productive in collaboration."

Between advances in science technology and global networking, Kratz said their data is more extensive and reliable than ever.

"Before, it was like trying to observe the world for only two hours, and the rest of the time you had to keep your eyes shut," he said. "Now, we can observe and learn our eyes open for a full 24